

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)  
BSc DEGREE EXAMINATION MAY 2025  
(Sixth Semester)

Branch – MICROBIOLOGY

VIROLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Viruses are considered:  
(i) Living organisms (ii) Non-living entities  
(iii) Both living and non-living (iv) Bacteria-like organisms
- 2 Which of the following methods is commonly used for the purification of viruses?  
(i) Streak plating (ii) Gram staining  
(iii) Differential and density gradient centrifugation (iv) Simple distillation
- 3 Which of the following is a characteristic of the lytic cycle in bacteriophages?  
(i) Integration of viral DNA into the host genome  
(ii) Host cell remains intact  
(iii) Rapid replication and lysis of the host cell  
(iv) Formation of a prophage
- 4 Which of the following is a key step in the replication of animal viruses?  
(i) Binary fission (ii) Adsorption and penetration  
(iii) Spore formation (iv) Budding of bacterial cells
- 5 Which of the following is a unique characteristic of viroids?  
(i) They have a protein coat  
(ii) They contain only RNA and lack a protein coat  
(iii) They infect only animals  
(iv) They contain both DNA and RNA

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a What is the difference between enveloped and non-enveloped viruses?  
OR  
b Why are enveloped viruses generally less stable outside the host?
- 7 a What is the purpose of using embryonated eggs for virus cultivation?  
OR  
b What is the role of cell culture in virus cultivation?
- 8 a What is the main difference between the lytic and lysogenic cycles in bacteriophages?  
OR  
b What is the significance of the one-step growth curve experiment in studying bacteriophage replication?

Cont...

- 9 a How do DNA viruses replicate and transcribe their genetic material inside host cells?  
OR  
b What is the difference between cytocidal infections and persistent viral infections?
- 10 a How are plant viruses transmitted from one plant to another?  
OR  
b What is the difference between prions and viroids in terms of structure and infection?

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Discuss the reasons why some viruses cause immediate symptoms while others remain dormant for years.  
OR  
b Discuss the structure, composition, and general characteristics of viruses.
- 12 a Explain the different methods used for the cultivation of viruses.  
OR  
b Describe the principles and applications of viral purification techniques.
- 13 a Describe the life cycle of the T4 bacteriophage, explaining the stages of the lytic cycle.  
OR  
b Explain the concept of lysogeny in temperate bacteriophages and how the lysogenic cycle differs from the lytic cycle.
- 14 a Describe the replication strategies of DNA viruses in animal cells.  
OR  
b Explain the replication strategies of RNA viruses, highlighting the differences between positive-sense and negative-sense RNA viruses.
- 15 a Explain the morphology and reproduction of plant viruses, describing their structure, mode of replication, and how they affect plant cells.  
OR  
b Discuss the characteristics and significance of fungal, algal, and insect viruses, highlighting their impact on ecosystems and agriculture.

Z-Z-Z

END